LESSON LEARNED
IN PUBLIC WARNING OF
GEOLOGICAL HAZARD
IN INDONESIA

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Scopes

1. Public warning of natural hazard includes:
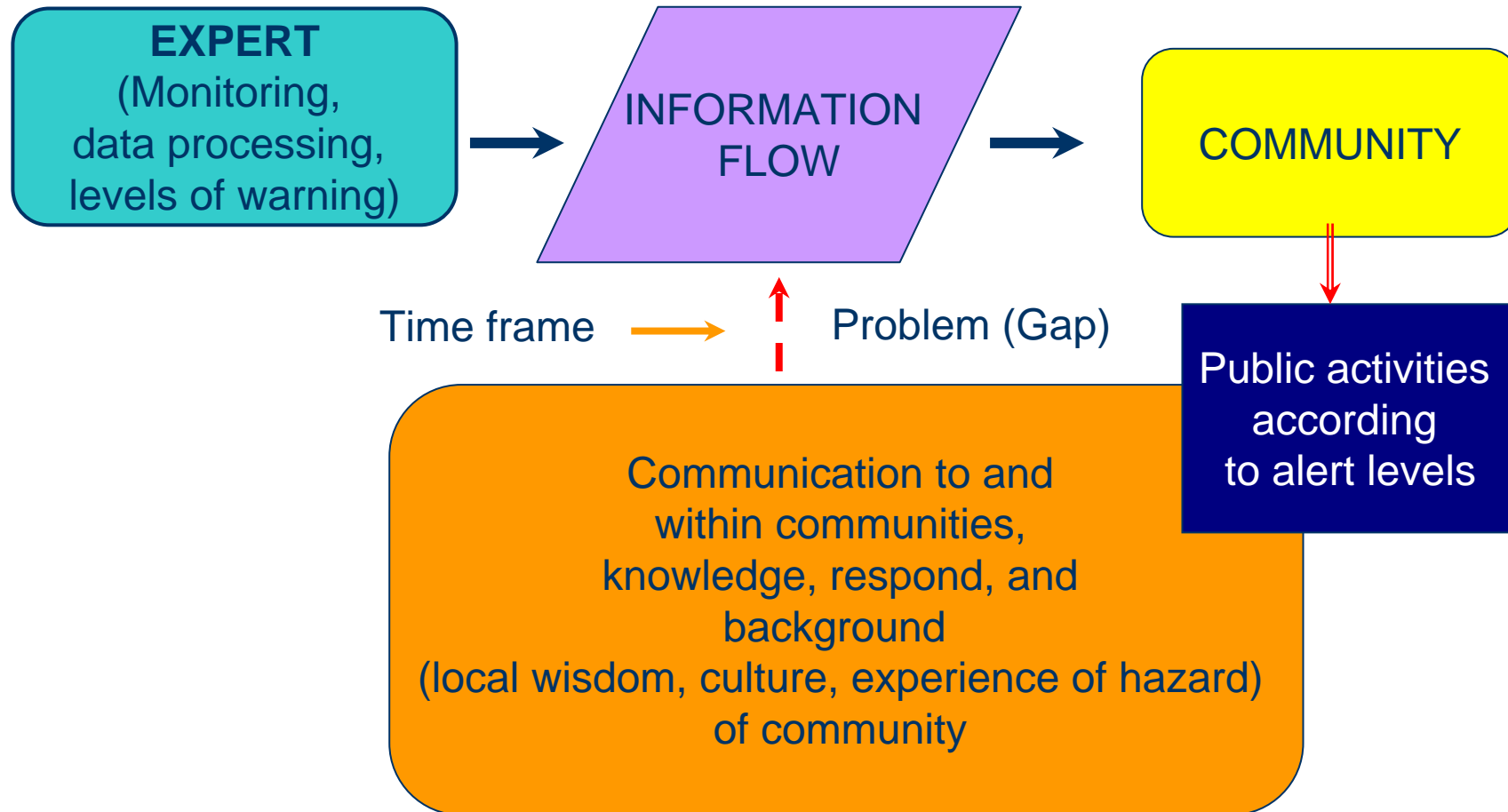
   Volcano eruption, earthquake, landslide

2. The goal of public warning is to:

   Provide accurate information within time frame of related hazard so that people at risk are properly alerted and have good response in the time of crises and act accoordingly to the procedure. This lead to reduced of loss of lives and properties.

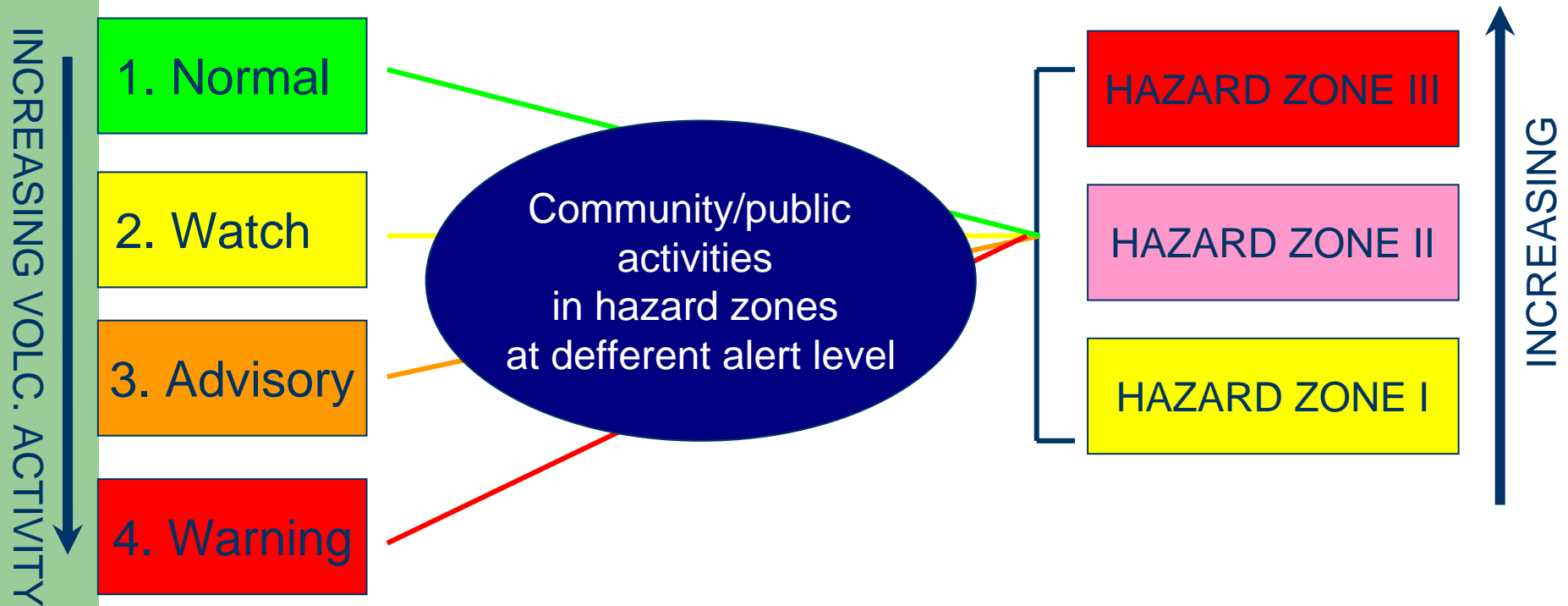3. The approach of public warning include:

   Improvement of monitoring system, capacity building, and good Early Warning System

CASE: EARLY WARNING SYSTEM OF VOLCANIC ACTIVITY

EXPERT
(Monitoring,
data processing,
levels of warning)

→

INFORMATION
FLOW

→

COMMUNITY

Time frame → Problem (Gap)

Communication to and
within communities,
knowledge, respond, and
background
(local wisdom, culture, experience of hazard)
of community

Public activities
according
to alert levels

PUBLIC ACTIVITIES
CORRESPOND TO EACH ALERT LEVEL
AT DIFFERENT RANK OF VOLCANIC HAZARD ZONE AREAS

INCREASING VOLC. ACTIVITY

1. Normal

2. Watch

3. Advisory

4. Warning

Community/public activities in hazard zones at defferent alert level

HAZARD ZONE III

HAZARD ZONE II

HAZARD ZONE I

INCREASING

Shall be supported by regulation

PROBLEMS OF PUBLIC WARNING

POINTS OF PROBLEM	CONDITION		
	PRESENT	GAP	IDEAL
Monitoring system	Various & incomplete	Various data and processing	High and compherensive technology
Alert level determination	Lower or higher	Technology & capacity building	Alert level match to grade of hazard
Duration and magnitude of event	Uncertain	Uncertainty & probability	Uncertain
Time gap between evacuation and hazard event	Uncertain	Sudden event & frequently unpredictable	Sufficient time to evacuate
Decision maker	Ocassionaly early or late evacuation	Capacity building	Precise time of evacuation
Community respond	Occasionaly little or a lot responsive	Capacity building & Experience of hazard	Good respond

PROBLEMS OF PUBLIC WARNING
(Continued)

POINTS OF PROBLEM	CONDITION		
	PRESENT	GAP	IDEAL
Warning equipment	Less distributed & various technology	Availability and condition	Well distributed and good condition
Occurences	Can be more than 1 event (e.g eruption & eq.)	Management of hazard	Good management of crises
Technology	Disruption of inf. flow	Availability and regulation	Certain condition of comm. (e,g.radio frequency, telp)
Source of income	High pop. growth and less controlled of urban planning	Regulation Capacity building	Constraint urban planning in hazard zone areas
Media	Inconsistencies of information	Capacity building & respond	Good information

HAZARD PREVENTION

POINTS OF PROBLEM	CONDITION		
	PRESENT	GAP	IDEAL
Dev. of monitoring system, deployment of early warning equipments and dev. of cultural awareness	Various monitoring syst., less distributed equipment & less informed community	Tot. no. of hazard areas & capacity building	Uniform monitoring syst., deployment of early warning eq. in areas at risk and cultural awareness within communities
Development of standard operation procedure of related hazard	Determination of alert level, information flows, evacuation processes, etc	Availabilty of guidelines & procedures	Informed & good respond of community
Development and updating of database of related hazard	Availabilty of information	Capacity building	Good & well organized database of related hazard to support decision makers

HAZARD PREVENTION
(Continued)

POINTS OF PROBLEM	CONDITION		
	PRESENT	GAP	IDEAL
Dissemination of information and hazard map	Less distributed & understanding	Knowledge management	Regular sharing and discussion of updating hazard information
Information of estimated area potential of hazard prior to the event	Availabilty of information to local goverment (e.g. Landslide)	Capacity building & technology	Availabilty of information, good official capacity & disseminated information
Cultural background and communication within communities and amongst stake holders	Irregular & less intensive research and communication	Identification of comm. needs & problem	Dev.of research and good communication within communities and amongst stake holders

COMMUNITY PREPAREDNESS

POINTS OF PROBLEM	CONDITION		
	PRESENT	GAP	IDEAL
Identification of vulnerable people within community	Data availability	Database	Updating data
Availability of information	Dissemination of information	Source of information	Building center of information
Communication and coordination	Less communication and coordination	Different step of actions	Good communication and coordination
Capability development	Diff. capacity level of comm. member & gov. official	Training and education program	Capacity building at all level
Contingency plan	Low no. of areas at risk have the plan	High number of hazard areas	Each individual areas at risk have the plan
Evacuation Drill	Low no. of areas at risk exp. ev. drill	High cost & tot. no. of hazard areas	Regular ev. drill of areas at risk

BUILDING CAPACITY OF COMMUNITIES

SHALL INCLUDE:

- Understanding type and character of hazard

- Recognition the source, and direction of hazard and areas at risk

- Awareness of safety track or areas during crises (related to action during crises) ---- evacuation process ----- hazard map

- Knowledge of settlement location to source of hazard

- Understanding of alert levels and information flow

- Strengthen communication and coordination amongst local communities

THE ROLE OF GOVERNMENT AND STAKE HOLDERS IN PUBLIC WARNING

GOVERNMENT:

1. Decision makers
2. Establishment of regulation, prcedures and guidelines
3. Monitoring, data collection & processing
4. Establishment, deployment and examination of early warning system
5. Dissemination of information

STAKE HOLDERS:

1. Dissemination of information
2. Enhancement of community resilience through training and education to increase community respond

CONCLUSION

PROBLEM IN HAZARD MITIGATION (Need to be solved)

NON TECHNICAL
1. Demographic condition and cultural background
2. Source of income
3. Less control in the distribution of inhabitants (tend to move to the source of hazard)

TECHNICAL
1. Less reinforcement of early age education
2. Nature of hazard mitigation is reactive rather than preventive
3. Less optimal in the application of hazard map
4. Less comprehensive of communication system
5. Uncertainties level of hazard

MITIGATION ACTIVITIES NEED TO BE IMPROVED

1. Continuous monitoring, data collection and processing

2. Understanding the impact and trigger of hazard in area at risk

3. Define the source of information and information flow

4. Identification of source of hazard, trigger, magnitude and frequency of hazard.

5. Intensive mapping of hazard and continuous research development

5. Define alert levels and expected community respond.

6. Define constraint of community activities at each level

7. Define contraint of urban development and regulation to support the condition